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ABSTRACT

Presented in the annual (1973-74) evaluation of Project Talented and Gifted are results of an appraisal of over 50 student participants (10- to 12-years-old) and the project staff and resource personnel. The project is described as a 3-month institute to provide experiences in areas such as learning to use creative thinking and problem-solving strategies, in language arts, science and mathematics, and music. Procedures, results, and evaluation instruments are described in three sections: the experiment, student-parent perceptions, and other sources. Reported are findings which include that Ss showed significant improvement in verbal originality; that the program did not appear to have brought improvement in areas of figural fluency, flexibility, originality, and elaboration; that both parent and student perceptions indicated that students were weakest in initiative and/or leadership experiences; that staff assessment was generally positive; and that recommendations made by resource personnel were both pertinent and valuable. Recommendations are noted for the project's second year which include special attention and emphasis to development of creative thinking abilities in fluency, flexibility, originality, and elaboration. (SB)

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PROJECT TALENTED AND GIFTED FIRST EVALUATION REPORT

(ESEA TITLE III REGION II)

Prepared by Joe Khatena, Ph.D.

For the West Virginia State Department of Education

Charleston, West Virginia

1974

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INTRODUCTION

This report is an attempt to evaluate the efforts of Project Talented and Gifted for the period 1st September 1973 to 30th June 1974, and consists of (1) an appraisal of the creative intellectual development of talented and gifted students accepted for the Project in terms of the experimental format outlined in the Addendum to the initial proposal, and (2) an appraisal of the function and operation of the Project Staff and supporting Resource Personnel relative to the Project's intent.

It is to be noted that the appraisal of Project student participants is based on a three month period of exposure of experimental students to the experimental program during the period January to April, 1974 with pretesting done between October and November, 1973 and posttesting done in April, 1974. The Director, Co-ordinators and Consultant after careful consideration decided to limit the appraisal to students' growth and development in creative intellectual abilities since they were of the opinion that a longer period of exposure to the treatments would stand a better chance of appropriately reflecting changes, if any, in their intellectual and achievement acceleration; appraisal of which components would be done in theposttesting scheduled for April, 1975, when the results would be reported as a part of the evaluation of the second year of the Project.

Instruments that have been used for the purpose of evaluating the creative development of talented and gifted students were the Torrance Tests of Creative Thinking (Figural Forms A and B) and Thinking Creatively with Sounds and Words (Forms A and B). In addition, an instrument entitled Something About Myself was also used to obtain information concerning parent perceptions of the creative orientations

of the students, and program participants of themselves. Further, two questionnaires were developed to obtain information from the Co-ordinators and Resource Peronnel regarding their perceptions of the Project's progress. To these has been added the Director's observational report of the Project. An example of a first step to obtain student evaluation of the Program has also been included although it falls somewhat outside the evaluation period in this report.

Conclusions then follow with recommendations made for the refinement and extension of the Program in the Project's second year of operation.

PART 1: THE EXPERIMENT EVALUATED

The need to provide special education for the accelerated growth and development of the talented and gifted in West Virginia was seen as urgent by a large number of educators and administrators in the surrounding nine counties of Region II, and found focus in an attempt to obtain Title III funds for the purpose of initiating a program for these children in 1973. With some revision and refinement of the initial proposal, and some considerable preparation of a team of leaders who would be responsible for the operation of such a venture the proposed educational program was funded as Project Talented and Gifted in 1973 at a time which appropriately anticipated the provision of education for children in need of special education, the talented and gifted included, by state law which has since come into effect on 1st July, 1974.

In preparation, the Project had to make many important decisions relative to the kind of educational facilitation that would best ensure optimal development of its participants, as well as those that would lead to an adequate appraisal of the effectiveness of such a program. The decisions hinged upon a survey of the efforts of other related projects for information and directions that would lead to the development of effective programs for the Project, and upon an evaluation format that followed closely principles of good experimental design which would allow dissemination of a valid program model at an appropriate time. Details of the above may be found in the original Proposal (1972), the Addendum to the Proposal (1973), and the Application for Project Grant Continuance (1974).

The description of efforts to provide special educational opportunities to the talented and gifted as outlined in the Addendum included the fact

that there had been no sustained efforts to provide such education in West Virginia, and with no adequate documentation of what had been done to date, that the survey by William Arn and Edward Frierson (1964) of programs for educating the gifted provided by the Bronx High School of Science, The Cleveland Major Work Program, The Colfax Elementary School of Pittsburg, Evanston Township High School, The Indianapolis Public Schools, The Lewis County Seminar of New York, The Palo Alto Unified School District, The Portland Public Schools, and The Quincy Youth Development Project showed that these projects stressed regular class programs relative to academic growth, development and achievement, a variety of general values basic to gifted programs, core practices for the effective fulfilment of the general aims of gifted programs, but that insufficient emphasis was given to experience-evaluated procedures relative to some of the basic goals of gifted programs, and to more creativity in educational leadership which would develop effective procedures capable of meeting equally the established goals of special programs for the gifted.

Several representative programs in recent operation include the California Project Talent (Hill, 1969), the San Diego City Schools Seminar Programs (Powell & Munsey, 1973), the Connecticut Comprehensive Model for the Education of the Gifted and Talented (Vassar, 1973), the Florida Program for the Gifted (Florida State Resource Manual for Gifted Child Education, 1973), and the efforts in North Carolina (Institute of Behavioral Research in Creativity, 1974) and Georgia (State Department of Education Plan, 1974).

In general these programs attempt to provide an enriched curriculum with emphasis given to the academic and fine arts areas to talented and gifted students so as to enhance their development. Greater attention

has also been given to the inclusion of creative approaches to learning and producing in their programs. However, while evaluation of the effects of the programs are a part of the business of these projects, little has been done to evaluate the effectiveness of such programs for talented and gifted students within a strict experimental design format with a view to obtain more precise directions concerning the relative value of the programs that will allow for greater generalizability.

The problem of planning a program for the talented and gifted within the Region II Project of West Virginia was approached with due caution: it was felt that there was a need to construct a program that would provide more than general enrichment, a program that would incorporate the best features of other programs for the talented and gifted and include precise enrichment models, independent and self-initiated study, experience based learning, use of the scientific method to study problems, acquisition of research and library skills, due exercise of the less required divergent and evaluative thinking operations in group and individual situations, opportunities for creative leadership, and reinforcement of creative and imaginative productions. Further, it was felt that there would be a definite need to appropriately measure the outcomes of such a program not only to determine the progress that would have been made from one phase of the Project to the next, but also to obtain clues for the refinement and extension of the program; hence it was thought necessary to organize the operations of the Project within the context of a good experimental design.

The purpose of this report is to present some preliminary information regarding the first of three evaluations that will be done in the three years of the Project to measure the effectiveness of the program for

talented and gifted students as it relates to (1) the development of their creative thinking abilities, (2) parents' perceptions of their children's creative orientations and student perceptions of themselves, and (3) observations of the progress of the Project by its Director, Co-ordinators and Resource Personnel with an example of Student appraisal of one component of the program in terms of recent Summer workshop experiences.

DEVELOPMENT OF CREATIVE THINKING ABILITIES

A facet of the creative potential which has intrigued many a scholar in the past few decades is the positive responsiveness of this potential to the effects of nurture, this being based upon the assumption that creative thinking is the heritage of all human beings whose mental functioning is not obstructed or impaired by nature or environmental forces (e.g. Royce, 1891; Rossman, 1931; Maslow, 1959; Osborn, 1963). Developmental acceleration of creative mental functioning through planned environmental enrichment has been claimed and generally substantiated by the research in Compendiums I and II of Research on Creative Imagination (1958 & 1960), the works of Osborn (1963), Youtz (1962), Parnes (1962, 1966, 1967ab), Parnes and Noller (1974), Torrance (1965, 1972), and others. On the whole, reported improvements in creative performance resulting from exposure to various training procedures and as measured by tests of creative thinking reinforces the view that much can be done to help the individual to realize his creative potential.

A variety of techniques have been used towards this end and has been grouped by Torrance (1972) as (1) training programs emphasizing the Osborn-Parnes Creative Problem Solving procedures, (2) training in general semantics, creative research, and the like, (3) complex

programs involving packages of materials such as the Purdue Creativity Program, (4) the creative arts as vehicles for teaching and practicing creative thinking, (5) media and reading programs designed to teach and give practice in creative thinking, (6) curricular and administrative arrangements designed to create favorable conditions for learning and practicing creative thinking, (7), teacher-classroom variables, indirect and direct control, classroom climate, and the like, (8) motivation, reward, competition, and the like, and (9) testing conditions designed to facilitate a higher level of creative functioning or more valid and reliable test performance.

Of the 142 studies reported in this paper (Torrance, 1972), only five studies explored the effects of exposing gifted students to creative thinking experiences: one explored the effects of providing gifted students with experiences in historical, descriptive and experimental research (Torrance & Myers, 1962), a second explored the effects of a reading program teaching children to think creatively (Casper, 1964), a third and fourth investigated the effects of exposing children to learn curriculum through self-directed or independent study (Bennett, Blanning, Bossiere, Chang & Collins, 1971: Gold, 1965). Four of these studies used gifted students between the fourth and sixth grades as subjects while the fifth had high school students as subjects. However, the effects of creative training programs or programs inherently stressing creative mental functioning and behavior have not been specially investigated with the talented and gifted in a sustained way. This is now being attempted by Project Talented and Gifted in West Virginia, and the purpose of this section of the report is to measure and evaluate the outcomes of exposing talented and gifted children to a program that has its roots basically in the principles of creative thinking and performance.

PROCEDURES

1. Design

A modified version of the two groups randomized pretest-posttest design was used (Campbell & Stanley, 1966) such that there was an experimental and a control group each sub-divided into three age categories (10, 11 and 12 year olds) further differentiated into Science and mathematics, language arts, and music sub-categories. Subjects were selected at random for the two treatment groups with the group that was to receive the experimental treatment or Program selected at random. By randomizing the treatment it was expected that reactive effects due to experimental arrangements would be controlled. In addition, to control to some extent the Hawthorn effect, the control group was provided with limited activities peripheral to the Program; besides, testing and retesting members of the control group together with those of the control group was expected to contribute further to this control.

2. Subjects

Principals, teachers and school psychologists in particular were invited to make referrals of students between the ages of 10 and 12 years attending elementary or junior high schools in Region II of West Virginia whom they thought were talented and gifted according to the following criteria: (a) I.Q. level of 130 and above as measured by the Stanford Binet, WISC, or any other established group test of intelligence such as the California Test of Mental Maturity, Otis Quick Scoring, or Cattell Culture Fair Test; (b) High achievement levels in the areas of language arts, mathematics, science, and music as measured by a standardized test or teacher observation; (c) High interests and motivational level.

Students were referred to the Project for screening and on the basis of their performance on intelligence, creativity and achievement

measures 180 of these students were selected as Project participants. The raw scores they obtained on (a) the Short Form of the California Test of Mental Maturity, (b) the Raven's Progressive Matrices, (c) the Torrance Test of Creative Thinking, (d) Thinking Creatively with Sounds and Words, and (e) the Standford Achievement Test, were converted to stanines, and an averge stanine was determined as an index of their general level of giftedness. These students were grouped in rank order in their subject area of preference and according to age preliminary to their selection for the two treatment groups. (Here it must be noted that two sub-tests of the Music Aptitude Profile were administered only to students who had opted for music as clues that would assist in the differentiation of these students, but whose scores were not included with those of the other measures to determine average stanines.) The average stanine acquired by each referral was used for the selection of the top 180 students for the Project. A table of random numbers was then used to select 90 students for each of two groups such that there were 30 of each age level with 10 students per subject interest area represented in each age group. The treatment groups were then determined as experimental and control at random by the flip of a coin.

It must be noted that the number of subjects who attended the posttest sessions decreased to 27 and 29 for the 10 and 12 year olds of the experimental group, and to 23, 23, 19 for the 10, 11 and 12 year olds of the control group respectively: in all experimental mortality numbered four subjects for the experimental group and 25 subjects for the control group.

3. Instruments

As this report is concerned with the evaluation of the effects of the Program upon the creative abilities of the participants, the instrumentation section will confine itself to a description of the figural and verbal measures of creative thinking that were used.

The Torrance Tests of Creative Thinking (Figural Forms A and B) were one set of instruments used to measure the creative performance of these talanted and gifted students and then evaluate the effects of the Program (Torrance, 1966, 1974) Each form of the test provides the subject with a battery of three tasks, with each task presenting stimuli designed to activate the manifestation of different facets of creative mental functioning.

The first activity entitled Picture Construction presents subjects with a shape made of colored paper either in the form of a teardrop or pear shape (Form A), or in the form of a jelly bean (Form B). Subjects are instructed to think of a picture that would include the shape as an integral part, and encouraged to produce a picture that no one else in the group would have thought of. In addition to originality of production subjects are encouraged to elaborate by adding ideas that would make the picture tell as interesting a story as possible. A title was to be given to the completed picture. A limit of 10 minutes was set for this activity. Products were scored for originality and elaboration.

The Incomplete Figures Activity as the second task presents subjects with 10 incomplete figures. The task is based upon the assumption that an incomplete figure sets up in an individual tensions to complete it in the simplest and easiest way possible: it requires creative strength to control this tendency to effect closure for original responses to

emerge. The instructions urge subjects to think of drawing uncommon pictures or objects that would tell as interesting and as complete a story as possible to which could be added other ideas elaborating upon the first, Each picture was to have a title. This activity is scored for fluency, flexibility, originality and elaboration. Once again a 10 minute period was set,

The Repeated Figures Activity is the third task and consists of 30 parallel lines (Form A) or 40 circles (Form B) as the stimuli. Here what is tested is the ability of the subject to make multiple associations to a single stimulus. Whereas the parallel lines task like the incomplete figures of the second activity creates a tendency in the respondent to give immediate structure and effect closure, the circles task requires the respondent to disrupt structure or destroy an already complete form to produce the new. In ths activity subjects are assessed for fluency, flexibility, originality and elaboration. A further 10 minutes was set for this task. Subjects completed the three activities of either form of the test in 30 minutes.

Validity and reliability data including group comparison norms and other relevant information concerning this measure are given in the Norms-Technical Manual (Torrance, 1966, 1974). Scoring of the tests was done according to the published scoring guides and scores for fluency, flexibility, originality and elaboration were obtained.

Two tests of verbal originality, Sounds and Images (Cunnington & Torrance, 1965) and Onomatopoeia and Images (Khatena, 1971a) combined in their present form as Thinking Creatively with Sounds and Words (Torrance, Khatena & Cunnington, 1973) provide either sound or word stimuli under free associative conditions, with originality of response determined

by statistical infrequency and relevance. The logic of both tests hinges upon the operation of the creative imagination to effect a break away from the perceptual set of audio or onomatopoeic verbal stimuli to bring about the production of original responses. Both these measures were used in the measurement of creative performance of these talented and gifted students and to evaluate the effects of the Program to which they were exposed.

In Sounds and Images, three repetitions of a group of four recorded audio effects are presented interspersed with narrated instructions that in effect force the listener to reject commonplace associations for free-wheeling and imaginative ideas. The test relies upon the process of free association and uses sound stimuli which range from the simple to the complex and from the common to the unusual to evoke original responses. For Form 1A the four sounds are thunder, audio-generator sweeps, reverberating spring in an echo chamber, and abstract sounds in the grand piano, and for Form 1B the four sounds are surf sound, electronically processed cymbal roll, sustaining pedal, and piano effects. The first reaction to the presentation of such stimuli often is the production of stereotyped or common responses. Considerable creative power is required to break away from the usual sequence of thought into an altogether different pattern in order to produce the original.

Onomatopoeia and Images presents auditory-visual stimuli in the form of onomatopoeic words. These words have semantic and sound elements which are tied to associative bonds of referential and inferential meanings established through usuage. They act as sets when presented to the listener from which he must break away by using what Coleridge refers to as the more conscious and less elemental secondary imagination

to produce new combinations of meaning. The sound component of these words subtly strikes the listener unaware, stirring the emotional base of intellect, providing a tendency toward the irrational response. It is in the intellectual-emotive interaction that the mechanisms of the creative process function most effectively in producing the original.

Just as in Sounds and Images, the test is administered in Standard conditions by presenting all instructions on long playing records with scripts aimed at conciseness and precision. A narrator prepares the subjects for the tests by explaining its nature and purpose and calling for the use of the imagination to create the original. A list of 5 onomatopoeic word stimuli for the children's version is read four times to the subjects (Form 1A; crackle, buzz, boom, moan, and growl; Form 1B; ouch, groan, jingle, zoom and fizzy). After the first, second and third readings of the complete list the narrator encourages the subjects to use their imagination to produce more original verbal images than before.

While Sounds and Images presents stimuli in the form of sound sets and Onomatopoeia and Images presents stimuli in the form of onomatopoeic word sets, both have certain built-in conditions that assist the listener in allowing the imagination freedom to create original images. Both tests use progressive warm-up, make divergent thinking legitimate, provide freedom from the threat of evaluation, invite regression, and aid the breaking of inhibiting sound and word sets.

Details about the construction, reliability, validity and other relevant data may be found in the Norms-Technical Manual of these measures (Khatena & Torrance, 1973). Scoring of these tests was done according to the published scoring guides and scores for originality

were obtained (Torrance, Khatena & Cunnington, 1973).

All these measures were administered by the three Coordinators following training and under direct supervision by the Project Evaluator as pretests during the October-November, 1973 period prior to participation in the Program, and again as posttests during April, 1974 following about three months participation in the Program.

All measures were scored by a group of Scorers trained and supervised by the Evaluator, and all related clerical work was done with the help of the three Co-ordinators and Secretaries of the Project. To determine interscorer reliability, 52 and 51 test booklets relative to Forms A and B of the Torrance Tests of Creative Thinking and Thinking Creatively with Sounds and Words respectively were selected at random from the experimental and control groups and reliability coefficients computed ranged from r = ,84 to r = ,98, all highly significant ($p < .01$).

TABLE 1

INTERSCORER RELIABILITY DATA

Measure	Form	N	r	Form	N	r
TTCT	A	52		B	51	
Fluency			.94*			.96*
Flexibility			.87*			.89*
Originality			.89*			.94*
Elaboration			.84*			.93*
TCSW	A	52		B	51	
Originality (S&I)			.98*			.95*
Originality (O&I)			.98*			.93*

*$p < .01$

A Program Model was developed for Talented and Gifted students between the ages of 10 and 12 years during a Summer Institute conducted in July, 1973 at the PACE Center by the Project Consultant with the assistance of the Director, the three Coordinators, and a group of Teachers who had been specially selected for the purpose, full details of which can be found in a Project unpublished report entitled "TAG With A Star" (1973). The superstructure of the Model was built upon the foundation of up-to-date conceptions of giftedness and creative potential, current practices in the nurture and guidance of the gifted with special focus given to Creative Problem-Solving and Synectics techniques (Gordon, 1961; Osborn, 1963; Parnes, 1967ab), Research Techniques for children's use (Torrance & Myers, 1962), Creative Thinking Strategies (Khatena, 1970, 1974a), and Creative Approaches to Learning incorporated as for example in the work of Renzulli (1973), and Williams (1971).

The Program began with a five week orientation for the experimental students to familiarize them with their new role and function in the Project that would demand they do much of the planning and organizing relative to this development. Experiences were provided for them to become aware of the need to learn in creative ways, to acquire research skills, to learn to use creative thinking and problem-solving strategies, to know more about how to use the library and how to operate and care for audio-visual equipment and materials that were available at the Center, and to learn the need for making accurate decisions about themselves and their work. Louis Wilcox, the Project Director, in the Application for Grant Continuance (1974) has reported these initial activities and his description has been included in the next few paragraphs.

"The first activity included all of the ninety children who are in the experimental group. The children were made aware of creative problem-

The fifth activity involved individual counseling sessions in which each student discussed with his interest-area Coordinator the projects in which he was interested and a final selection of his first project was made. The students filled out interest inventories. Each was instructed in the maintenance of a log of activities in which he was to be involved. Each learned to make a pre-project evaluation and a post-project evaluation. Most of the students emerged from the orientation with a clearly defined project in mind.

As part of the first activity, the students checked a list of possible tours, workshops, and demonstrations in which they would be interested. From this indication of interests, special activities were planned and offered as general group activities. Included were such happenings as acrylic painting at the Huntington Art Galleries, a visit to the computer facility at Marshall University, the dress rehersal for the play, 'Arsenic and Old Lace' given by the Huntington Community Players, a visit to Sunrise Children's Museum Planetarium and Art Galleries in Charleston, a workshop on photography, a nature tour along the Huntington Galleries Nature Trail, and a visit to the Educational Television Studio at Marshall University."

Details of the Program within each subject area are also included in the same report and presented in the next few paragraphs.

"Thirty of the ninety students were selected for the Project because of their interest in language arts. During the orientation activities those students chose either individual projects or formed group projects. The largest group (12 students) is interested in writing news stories, feature stories, and articles for newspapers and magazines. This group is currently learning journalism and the basic principles of reporting their experiences.

The journalism students, whose learning experiences and activities are currently running parallel, will later split into two groups of six each. One group is interested in publishing a magazine; the other group is interested in publishing a newspaper. There is sufficiency of different individual interests among these students to achieve both, and perhaps continue, the publication of both the TAG newspaper and the TAG magazine.

A group of four students is interested in some aspects of plays, their writing or their production. The general interests of those children will be parallel throughout their current individual projects, making the scheduling of many of their experiences manageable.

Four students are interested in learning Spanish and two in learning French. Resource people who are eager to work with the children have been found and they are hard at work.

Three children are interested in becoming book authors. They are working with a college English instructor who has a special interest in the subject.

One student is writing television commercials. That student is currently working with the journalism group as well as with a resource expert who has volunteered to give her individual attention.

Another student is illustrating a book. That student is currently participating with the book authors group. Also, an artist has been recruited to work with her.

Some language arts students participated in a mixed-media project which included the writing of poetry, composing music to match the mood of the poems, painting stage scenery to serve as a background, presenting choral reading of the poems while their moods were expressed in creative body motion.

Many language arts students attended the Applachian Arts Odyssey at Morris Harvey College. They also toured the newspaper office and press room of the Huntington Publishing Company.

A group workshop, 'Creative Writing and Journalism,' was conducted by Dr. Joe Khatena, Professor of Education at Marshall University.

A TAG Chess Club was organized by the language arts students under the guidance of a local high school student who has participated in amateur chess competitions.

Through exhaustive effort, the language arts co-ordinator was able to recruit more than one hundred resource people who have volunteered to assist in some way - some in many different areas of language arts."

"The TAG students who elected the field of science and mathematics for specialization participated in the four general orientation sessions. On the fourth session they met with their fellow science and mathematics participants and talked about themselves and their interests. They went through the problem-solving game together and then decided upon projects they wish to undertake. Many of them borrowed books and/or materials from the PACE Center to help them with their projects.

It was decided that one day each month would be set aside for workshops for the students in science and mathematics. The topics were chosen by the number of responses indicating interest to topics on a questionnaire. Students could attend any or all of the workshops, as they desired. Speed Arithmetic (The Trachtenberg System) and A Lemon Workshop were held on the morning and afternoon respectively of March 23. Workshops scheduled for April and May include: The Geologic History of Region II of West Virginia (to be given at Marshall University), Crystals, The Slide Rule, and The Strange World of Einstein's Relativity. A Star Party is also being planned for an evening in late April at the Huntington

Galleries.

After TAG students decided upon topics for individual projects or specialized study they were divided into small groups that would meet once a month containing (when possible) students with similar interests. In these small group sessions, students would report to each other the things they had done and learned since the last meeting. They would discuss future plans and check out materials as needed. They would also have time to use audio-visual materials if they desired; they could copy materials on the Xerox machine, and could work on group projects. These meetings were relatively unstructured. However, almost without exception, students had interests they wished to pursue and used their time to their benefit.

Group I consisted of those students who were interested in the study of astronomy and related topics such as relativity and ancient astronauts. This group has done a good bit of reading in their fields, and many of them attended the planetarium lecture at Sunrise in Charleston, West Virginia. Films on astronomy have been available for them to watch during their small group meetings.

Group II consisted of students interested in the life sciences and geology. Three of these students became interested in the dissection of a frog and obtained frogs and dissection equipment and performed this operation. They first studied in books what they could about this topic.

Group III consisted of students having a variety of interests - ranging from oceanography to nature study to model railroading and ship building to the study of dinosaurs and the study of crystals. These meet and discuss general topics, discuss their projects with each other and then proceed to find materials of interest. One Saturday they

collectively decided they wanted to watch all of the 8mm film loops that the PACE Center owned. They gathered around a table and showed these loops to each other, discussing the why's of each one.

Group IV consists of those students interested in the field of computers. Most of these students attended the computer activity at Marshall University and were very enthralled by the workshop. Some of them have done reading on computers and they have viewed the films on computer training prepared by the United States Navy. They have been building a small LOGIX Electronic Computer which they will be able to program for many different problems and games.

Two of the students live distances that generally limit their participation at the PACE Center. One lives at Sunnyside in Mason County and one at Alum Creek in Lincoln County. These students have been assigned consultants from their respective communities and have been working with them on an individual basis.

Although the students are scheduled to come to the PACE Center once a month for small group sessions and once a month for 1 or 2 workshops as they desire as well as the general activities in which they wish to participate, they are not limited to these scheduled times. They may come in after school or on Saturdays when they are not scheduled so that they may make use of the materials available or have personal conferences. Several students have come in after school to obtain materials for class talks and demonstrations. Some have come in to work on the computer, and one young lady came in to show her Coordinator a 'find' that she had made in the part one day."

"Thirty experimental group children elected to participate in the music section of the Talented and Gifted Program. These children, like the others, went through the initial orientation sessions introducing

them to library skills, problem-solving techniques, and audio-visual aids.

On the fourth session the children met as a music group. They discussed what they were interested in doing and filled out interest sheets. By way of introduction to music activities, they also participated in improvising some music and listened to some music. They then played the problem-solving game in an effort to decide on individual projects.

Using the results of the interest sheets , as well as verbally expressed interests, the coordinator organized several large group activities. Since an almost equal interest was shown in art and music, activities were scheduled in both areas. The music activities included an Electronic Music Workshop, preceeded by a recording session, an introduction to multi-media techniques, and a workshop on the playing and building of dulcimers. Art included an acrylics workshop and two sessions on clay modeling and mould making. As a part of the whole TAG program the children also had the opportunity to attend tours of both the Huntington and Charleston Art Galleries.

All attendance at large and small group activities was voluntary but the children always were asked to make a commitment in advance as to whether they would attend or not. In most cases response was very good with most children wanting to attend the sessions.

In areas where fewer children expressed an interest or where subject required, small groups were organized to meet on a regular basis. One of these groups consists of seven children who all attend the same elementary school (Meadows Elementary). These children decide, with guidance, from week to week what they wish to do. So far they have learned a standard rock chord progression and written individually several songs using that progression. They have begun to learn to play the guitar. They have learned how to write a round and again have written several of

their own. They also learned and used chance techniques to compose the music for part of the multi-media production given at the West Virginia Music Educators Convention at Marshall.

Another small group was organized to play band instruments in a group. These children have begun learning improvisation based on blues progressions and on dorian melodies and modes. They have also begun learning to transpose for their own and each others' respective instruments. One of the children has written out popular songs for both trumpet and saxophone. Motivation runs high and one of the most avid participants comes from Lincoln County to play in the group. Recently, a science and math student heard a rehersal and decided to join the group.

After the large group introduction to multi-media techniques a small group was organized to actually produce some multi-media techniques a small group was organized to actually produce some multi-media art works. These children met more than once a week for about a month then performed their 'products' for the West Virginia Music Educators Convention at Marshall University on March 29. The production included two recorded musical compositions by some of the participants; two original poems, one by an individual student and one a group effort at nonsense poetry; two stage sets designed and painted by some of those interested in doing art work, and two interpretive dances, again made up and performed by some of the students. Also, some of the students read the poetry during the display. All the facets of the arts were interwoven and all performed simultaneously. Any or all segments of this production was open to both music and language arts students.

In the after school hours and early Saturday morning children who have expressed an interest are also receiving private instruction. So far this includes several piano students, two flute students, and a drummer. Also a cello player is working with the Coordinator

playing chamber music which includes flute and cello. Two music students have received individual help in areas outside music. These include computer science and video taping. Teachers have been contracted to help two art oriented students individually with lettering and animation."

5. Statistics

A 2 x 3 factorial analysis of Covariance design was used (Bruning & Kintz, 1968) to control for the effects of pretesting upon criterion posttest scores so that the main effects of training and age, and the extent of interaction effects of training x age could be determined relative to figural fluency, flexibility, originality and elaboration as measured by the Torrance Tests of Creative Thinking, and verbal originality as measured by Sounds and Images, and Onomatopoeia and Images of the Thinking Creatively with Sounds and Words battery.

RESULTS AND DISCUSSION

The pretest and posttest data obtained on both the Torrance Tests of Creative Thinking, and Thinking Creatively with Sounds and Words by the students of the three age groups in the experimental and control groups were analysed, and means and standard deviations for figural fluency, flexibility, originality and elaboration, and verbal originality were computed and are presented in Table 2.

1. Torrance Tests of Creative Thinking as Criterion Measure.

(a) Figural Fluency (or the ability to produce many ideas with pictures)-- Pretest fluency mean scores for the experimental groups ($\underset{E10}{M}$ = 20.85, $\underset{E11}{M}$ = 21.23, and $\underset{E12}{M}$ = 20.24) and the control groups ($\underset{C10}{M}$ = 20.70, $\underset{C11}{M}$ = 23.00, and $\underset{C12}{M}$ = 22.47) range between 20.24 to 23,00 being somewhat higher for the 11 and 12 year old controls, with 11 year experimentals and controls achieving slightly higher than the others and in favor of the 11 year old controls. Posttest mean fluency scores of the experimental groups

($\underset{E10}{M}$ = 20.40, $\underset{E11}{M}$ = 21.60 and $\underset{E12}{M}$ = 22.06) when compared to fluency mean scores of the control groups ($\underset{C10}{M}$ = 20.44, $\underset{C11}{M}$ = 24.96 and $\underset{C12}{M}$ = 22.09), show some gains for the 12 year old experimentals thus removing the little hump caused by lower pretest mean scores to show some small increase with age, whereas although gains in mean fluency scores on the posttest appear for controls at age 11 years no gains appear for 10 and 12 year old controls thus maintaining the small hump in the age pattern observed in their pretest mean scores, with mean difference in the pretest for eleven year experimentals and controls of 1,77 showing an increase in the posttest in favor of the controls by 3,36 points (Pretest: $\underset{E11}{M}$ = 21,23, $\underset{C11}{M}$ = 23,00; Postcest: $\underset{E11}{M}$ = 21,60, $\underset{C11}{M}$ = 24,96.

Variance for each of the three experimental groups show very little fluctuation on the pretest ($\underset{E10}{SD}$ = 6,81, $\underset{E11}{SD}$ = 6,99 and $\underset{E12}{SD}$ = 6,14) with considerable difference for the 11 year olds on the posttest ($\underset{E10}{SD}$ = 6.58, $\underset{E11}{SD}$ = 9,29 and $\underset{E12}{SD}$ = [illegible]) increasing from SDs of 6,99 to 9,29, whereas the variance of each of the three control groups shows a progressive decline on the pretest with the variance highest and lowest for the 10 and 12 year olds ($\underset{C10}{SD}$ = 8,47, $\underset{C11}{SD}$ = 7,83 and $\underset{C12}{SD}$ = 6,58) and with some greater stability in the variance for the three groups on the posttest ($\underset{C10}{SD}$ = 7,49, $\underset{C11}{SD}$ = 7,20 and $\underset{C12}{SD}$ = 7,85),

(b) Figural Flexibility (or the ability to produce many different ideas with pictures) -- Pretest flexibility mean scores for the experimental groups ($\underset{E10}{M}$ = 16,04, $\underset{E11}{M}$ =16,87 and $\underset{E12}{M}$ = 15,83) when compared to those for the control groups ($\underset{C10}{M}$ = 15,57, $\underset{C11}{M}$ = 18.13 and $\underset{C12}{M}$ = 17,97) show less fluctuations in mean differences for the experimentals than for the controls with the difference between highest and lowest mean scores for experimentals and controls being 1,04 and 2,56 points respectively. For both experimentals and controls highest mean flexibility scores occur for the 11 year olds.

Posttest mean flexibility scores for the experimental groups ($\underset{E10}{M}$ = 15.30, $\underset{E11}{M}$ = 17.13 and $\underset{E12}{M}$ = 17.31) when compared to mean flexibility scores for controls ($\underset{C10}{M}$ = 15.48, $\underset{C11}{M}$ = 18.04 and $\underset{C12}{M}$ = 17.11) show that both 11 and 12 year old experimentals as having made gains in mean scores while 10 year old experimentals show some small loss thus removing the hump in the age pattern observed in the pretest mean scores, whereas all three age levels of the control group show some small loss in mean flexibility scores with the 11 year old controls still obtaining higher mean scores than 10 and 12 year controls and maintaining the hump in the age pattern observed in the pretest mean scores,

Variance for each of the three experimental groups show little fluctuation on the pretest with a small increase in the variance on the posttest for 11 year old experimentals (Pretest: $\underset{E10}{SD}$ = 4.74, $\underset{E11}{SD}$ = 4.87 and $\underset{E12}{SD}$ = 4.54; Posttest: $\underset{E10}{SD}$ = 4.77, $\underset{E11}{SD}$ = 5.56 and $\underset{E12}{SD}$ = 4.84) whereas the variance though somewhat greater for the 10 and 11 year old controls is lower for 12 year controls on the posttest, with the highest variance seen for the 11 year old controls ($\underset{C10}{SD}$ = 5.21, $\underset{C11}{SD}$ = 6.86, $\underset{C12}{SD}$ = 3.85). On the posttest the pattern in the variance shows a decrease for the 10 and 11 year olds and an increase for the 12 year old controls ($\underset{C10}{SD}$ = 5.10, $\underset{C11}{SD}$ = 4.78, and $\underset{C12}{SD}$ = 5.14).

(c) Figural Elaboration (or the ability to add details to the basic ideas with pictures) -- Pretest elaboration mean scores for the experimental groups ($\underset{E10}{M}$ = 112.26, $\underset{E11}{M}$ = 123.70 and $\underset{E12}{M}$ = 121.31) when compared to those of the control groups ($\underset{C10}{M}$ = 110.70, $\underset{C11}{M}$ = 122.09, $\underset{C12}{M}$ = 125.05) show that 10 and 11 year old experimentals as obtaining higher mean scores than 10 and 11 year old controls but that 12 year old controls do better than 12 year old experimentals who show a slight drop in mean scores leaving the 11 year old experimentals with the highest mean scores of the three

experimental age groups, while 12 year old controls have the highest mean scores of all sub groups on the posttest both the experimental and control groups show a drop in mean elaboration scores ($\underline{M}_{E10}$ = 93.70, $\underline{M}_{E11}$ = 100.87 and $\underline{M}_{E12}$ = 98.66; $\underline{M}_{C10}$ = 90.70, $\underline{M}_{C11}$ = 97.26 and $\underline{M}_{C12}$ = 96.11) in favor of all age levels of the experimental groups with the experimentals maintaining relatively the same rise and fall pattern in the posttest as in the pretest while the loss in mean elaboration score on the posttest depresses the rise pattern in the pretest to the rise and fall pattern of the posttest in much the same way as the pattern of mean scores of the experimental groups.

The pattern in the variance for the experimental groups show a rise and fall somewhat similar to the rise and fall in the mean elaboration scores on the pretest, with a decreasing variance for all groups on the posttest to produce a slope in the variance from high to low for 10 to 12 year old experimentals (Pretest; $\underline{SD}_{E10}$ = 36.45, $\underline{SD}_{E11}$ = 39.28 and $\underline{SD}_{E12}$ = 31.28; Posttest; $\underline{SD}_{E10}$ = 32.20, $\underline{SD}_{E11}$ = 30.79 and $\underline{SD}_{E12}$ = 25.88). The variance for the control groups on the pretest is greatest for the 10 year olds with a marked drop and small rise for the 11 and 12 year olds respectively ($\underline{SD}_{C10}$ = 41.46, $\underline{SD}_{C11}$ = 27.21 and $\underline{SD}_{C12}$ = 30.61). On the posttest the variance is greater for the 12 than 10 year old controls with the same drop pattern, for 11 year olds as in the pretest ($\underline{SD}_{C10}$ = 33.00, $\underline{SD}_{C11}$ = 30.32 and $\underline{SD}_{C12}$ = 42.55).

(d) Figural Originality (or the ability to produce unusual, infrequent and relevant ideas with pictures) -- Mean originality scores on the pretest for the experimental groups ($\underline{M}_{E10}$ = 33.44, $\underline{M}_{E11}$ = 36.33 and $\underline{M}_{E12}$ = 33.96) when compared to those of the control group ($\underline{M}_{C10}$ = 32.00, $\underline{M}_{C11}$ = 35.13 and $\underline{M}_{C12}$ = 36.58) are higher for 10 and 11 year old experimentals than controls but lower for 12 year old experimentals than controls with a rise and fall in mean originality scores with age for the controls. On the posttest all six groups show decrements in mean scores with greater losses sustained

by experimentals (Losses: $\underset{E10}{M}$ = 1.29, $\underset{E11}{M}$ = 7.56 and $\underset{E12}{M}$ = 5.24) than controls (Losses: $\underset{C10}{M}$ = 1.17, $\underset{C11}{M}$ = 3.26, $\underset{C12}{M}$ = 3.00) especially the 11 year olds. In addition, while mean originality scores get lower with increasing age for the experimentals, mean originality scores get higher with increasing age for the controls.

The pattern in the variance on the pretest shows a fall for 11 year old experimentals and 12 year old controls ($\underset{E10}{SD}$ = 12,67, $\underset{E11}{SD}$ = 8.49 and $\underset{E12}{SD}$ = 11.59; $\underset{C10}{SD}$ = 14,91, $\underset{C11}{SD}$ = 14,69 and $\underset{C12}{SD}$ = 8.91). On the posttest the variance is higher than that on the pretest for 10 and 11 year old controls decrement in the variance is evident with increasing age for both the experimentals and controls ($\underset{E10}{SD}$ = 14.00, $\underset{E11}{SD}$ = 10,47 and $\underset{E12}{SD}$ = 7,28; $\underset{C10}{SD}$ = 15,23, $\underset{C11}{SD}$ = 13,12 and $\underset{C12}{SD}$ = 8,62).

2. Thinking Creatively with Sounds and Words

(a) Verbal Originality on Sounds and Images (or the ability to produce unusual, infrequent and relevant ideas with words) -- Mean originality scores on the pretest for the experimental groups ($\underset{E10}{M}$ = 32,44, $\underset{E11}{M}$ =33.60 and $\underset{E12}{M}$ = 34,31) when compared to those of the control group ($\underset{C10}{M}$ = 35.04, $\underset{C11}{M}$ = 34.26 and $\underset{C12}{M}$ = 35.42) show a rise in mean originality scores with age for the experimentals and a small drop in mean originality scores for 11 year old controls with the control group showing higher mean scores than the experimental groups at all age levels. On the posttest 10 and 12 year old experimentals show increment in mean scores while 11 year old experimentals show a slight decrement in mean score ($\underset{E10}{M}$ = 34.07, $\underset{E11}{M}$ = 33.10 and $\underset{E12}{M}$ = 34.45) whereas 10 year old controls show a decrement in mean score and 11 and 12 year old controls show an increment in mean scores ($\underset{C10}{M}$ = 32.26, $\underset{C11}{M}$ = 35.00 and $\underset{C12}{M}$ = 36.42) with 11 and 12 year controls doing better than the 11 and 12 year old experimentals, and 10 year old experimentals showing gains over 10 year old controls.

The variance on the pretest for 10 year old experimentals is somewhat greater than the variance for 11 and 12 year old experimentals ($\underset{E10}{SD}$ = 7.01, $\underset{E11}{SD}$ = 5.59 and $\underset{E12}{SD}$ = 5.59), and this is also the case with the control groups where the variance is highest and lowest for 10 and 12 year old controls respectively ($\underset{C10}{SD}$ = 8.42, $\underset{C11}{SD}$ = 6.48 and $\underset{C12}{SD}$ = 4.62). Posttest variance differs relatively little for the three experimental groups ($\underset{E10}{SD}$ = 6.88, $\underset{E11}{SD}$ = 6.38 and $\underset{E12}{SD}$ = 7.09) whereas differences tend to be greater for those of the control groups ($\underset{C10}{SD}$ = 8.17, $\underset{C11}{SD}$ = 5.26 and $\underset{C12}{SD}$ = 6.59),

(b) Verbal Originality on Onomatopoeia and Images (or the ability to produce unusual, infrequent and relevant ideas with words) -- Pretest originality mean scores for the experimental groups ($\underset{E10}{M}$ = 39.70, $\underset{E11}{M}$ = 39.83 and $\underset{E12}{M}$ = 46.62) as compared to those of the control groups ($\underset{C10}{M}$ = 39.35, $\underset{C11}{M}$ = 40.96 and $\underset{C12}{M}$ = 44.10) indicate an increase in mean scores with age for both groups somewhat in favor of the 12 year old experimentals and 11 year old controls. Posttest originality mean scores for the experimental groups ($\underset{E10}{M}$ = 39.59, $\underset{E11}{M}$ = 33.90, $\underset{E12}{M}$ = 40.48), although they show drops in mean scores when compared to the pretest data, especially for the 11 and 12 year old experimentals (Differences Pretest-Posttest Means: $\underset{E10}{M}$ = 0.11, $\underset{E11}{M}$ = 5.93 and $\underset{E12}{M}$ = 6.14) are higher than mean scores of controls at all age levels ($\underset{C10}{M}$ = 32.30, $\underset{C11}{M}$ = 33.70 and $\underset{C12}{M}$ = 31.58) with controls also showing drops in posttest mean scores as compared to pretest mean scores (Differences Pretest-Posttest Means: $\underset{C10}{M}$ = 7.05, $\underset{C11}{M}$ = 7.26 and $\underset{C12}{M}$ = 12.52). These decrements in originality mean scores are greater for the controls.

The variance in the pretest as compared to the posttest for all age groups of the experimentals (Pretest; $\underset{E10}{SD}$ =12.34, $\underset{E11}{SD}$ = 6.95 and $\underset{E12}{SD}$ = 10.36; Posttest: $\underset{E10}{SD}$ =16.68, $\underset{E11}{SD}$ = 12.91 and $\underset{E12}{SD}$ = 16.93) is less,

with a drop in the variance for 10 year olds in both the pretest and posttest. Variance for the control groups shows the greatest differences for 12 year old controls between the pretest and posttest (Pretest: SD_{C10} =10.53, SD_{C11} = 13,65 and SD_{C12} = 12.59; Posttest: SD_{C10} = 10.89, SD_{C11} = 13.38 and SD_{C12} = 15.52).

A 2 x 3 factorial analysis of covariance was done to remove the covariate effect of pretesting and to test for the significance of main effects of Training and Age, and interaction effects of Training x Age relative to figural fluency, flexibility, elaboration and originality, and verbal originality. The results of the computations are summarized in Table 3. The main effects of the Training Program were found to be significant only for verbal originality as measured by Onomatopoeia and Images (F = 4,77, df = 1/144, $p < .05$) which meant that students who participated in the Program were able to produce more unusual, infrequent and relevant ideas with words than those students who did not participate in the Program. The only significant main effects relative to age were found for figural originality (F = 18.63, df = 2/144, $p < .01$) and refers here to the decrement in the ability to produce more original ideas with pictures by Program participants and an increment in the same kind of productivity by non participants as a function of age. There were no significant main effects for figural fluency, flexibility and elaboration as measured by the Torrance Tests of Creative Thinking, and for verbal originality as measured by Sounds and Images of Thinking Creatively with Sounds and Words test battery relative either to a function of age or the training program; neither were there significant interaction effects of the training program and age for any of these abilities.

In reviewing the data, it does seem that some changes are taking place for participants and non participants of the Program alike, changes that are not altogether directly related to the effects of the Program. Among the many variables that may account for these changes are:

(1) The effects of the pretest which may have had something to do with it, and although the statistics have attempted to remove the covariate influence, the reactive effects of testing and subjects still remain: that is to say that while the initial differences expressed in the scores of subjects taking the test for the first time are levelled by the computation technique used in the analysis of the data, the fact that different subjects do react differently to the initial test taking may account for the kind of results obtained.

(2) Of course the first test taking was done in circumstances where participants and non participants had not been differentiated, and that selection of these students for the different treatment groups was done on the basis of a composite score that permitted the influence of other components of abilities to operate which meant that higher scores on achievement and intelligence measures could compensate for somewhat lower scores on measurses of creativity; and it is possible that even the randomization process did not altogether equate the treatment groups on the creativity variable by the very nature of the selection procedure used.

(3) The fact that the test were scored by different people may have had some effects upon the results, and so checks were run to determine if this had influenced the directions of the data; however, the high interscorer reliability indices obtained indicate that this was unlikely though some residual small but not significant error exists.

(4) Experimental mortality or loss of subjects may have had something to do with the results: although the design of the study attempts for this, the fact that 4 experimental or participant and 25 control or non participant students did not take the posttest may very well have biased the mean values computed for the different sub experimental and control groups and determined the direction of the results obtained.

(5) The experimental variable in terms of the training program while sound in rationale and composition may not have been permitted to operate at full strength to bring about anticipated changes in the participants. At this point it should be noted that not all participants took part in the activities organized for them and at their request as seriously as the Project had planned: a rough analysis of the attendance pattern of Program participants showed that although 63 of the 90 or 70% of the student participants attended Program activities 50% or more of the time, 27 or 30% of this group attended less than 50% of the time, with more 12 year olds (12 of 30 or 40%) attending the program less frequently and with more 11 year old language arts participants and 12 year old science and mathematics students doing this. This is bound to conceal the full effects of the program to accelerate the development of the creative potential of these gifted students (Table 4).

(6) Further, the students may have had insufficient exposure to the creative components of the program and certainly the time they have been permitted to spend in activities at the Center has been rather limited both by the difficulty of scheduling meetings for them on other than two hour Saturday activities on the one hand and on competing home and school activities which tend to encourage relatively poorer attendance as pointed out in the preceding paragraph than needs be, and also to inhibit productive follow up work away from the Center on the other hand.

(7) Ofcourse the three month period of exposure to the program prior to the posttesting of its effects may be considered somewhat brief, though there is considerable evidence to support favorable effects of programs levelled at nurturing creative thinking and performance over an even shorter period as can be found in a recent survey of 142 studies done relative to the effects of exposing students to creative programs of various kinds (Torrance, 1972).

Normative data on the Torrance Tests of Creative Thinking (Torrance, 1974) and Thinking Creative with Sounds and Words (Khatena & Torrance, 1973) is based upon samples of heterogenous groups with separate norms for gifted students not being available. The mean raw scores obtained by participants and non participants on the pretest and posttest in which Figural Forms A and B of the Torrance Tests of Creative Thinking were used respectively when converted to T-scores showed these students as a group being average on flugncy (T-score = 45 to 50), flexibility (T-score = 50), bordering between average and above average on originality (T-score = 50 to 60), and between above average and very good on elaboration (T-score = 60 to 80). The mean raw scores obtained by these students on the pretest and posttest in which Forms 1A and 1B of Thinking Creatively with Sounds and Words were used respectively when converted to standard scores (with a mean of 50 and a standard deviation of 10) showed the Project students to be very high on Sounds and Images verbal originality (Standard Score = 70 to 80) and between average and above average on Onomatopoeia and Images verbal originality (Standard Score = 50 to 60). It seems that apart from the ability to elaborate well and to some lesser extent to be verbally original these groups of students are relatively average in creative thinking abilities.

CONCLUSIONS

Much needs to be done to alleviate this problem and free the creative potential of these students towards greater productivity. More creative experiences need to be planned and more time set aside for the exposure of these students to them so that they may in the next evaluation reflect improvements in their fluency, flexibility, originality and elaboration test scores. Highly gifted and talented students are known to be more in the habit of doing convergent thinking and more prone to use rapidly evaluative thinking operations before allowing full functioning of creative mental processes. It would be of great value to continue exposing and encouraging them to creative problem-solving situations which call for a greater use of delayed judgement, and the use of analogy in their thinking. Appropriate attitudes need to be established and inhibiting attitude sets corrected to permit more opportunities for creative behavior and mental activity. The Project may set as one of its major goals for the second year of operation the development in gifted and talented students a creative style of functioning.

TABLE 2

PRETEST AND POSTTEST MEANS AND STANDARD DEVIATIONS OF EXPERIMENTAL AND CONTROL GROUPS ON

Measures	Experimental						Control					
	10(N=27)		11(N=30)		12(N=29)		10(N=23)		11(N=23)		12(N	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	
PRETEST												
TTCT												
Fluency	20.85	6.81	21.23	6.99	20.24	6.14	20.70	8.47	23.00	7.83	22.47	
Flexibility	16.04	4.74	16.87	4.87	15.83	4.54	15.57	5.21	18.13	6.86	17.97	
Elaboration	112.26	36.45	123.70	39.28	121.31	31.28	110.70	41.46	122.09	27.21	125.05	
Originality	33.44	12.67	36.33	8.49	33.96	11.59	32.00	14.91	35.13	14.69	36.58	
TCSW												
Originality(SI)	32.44	7.01	33.60	5.59	34.31	5.59	35.05	8.42	34.26	6.48	35.42	
Originality(OI)	39.70	12.34	39.83	6.95	46.62	10.36	39.35	10.53	40.96	13.65	44.10	
POSTTEST												
TTCT												
Fluency	20.40	6.58	21.60	9.29	22.06	6.36	20.44	7.49	24.96	7.20	22.09	
Flexibility	15.30	4.77	17.13	5.56	17.31	4.84	15.48	5.10	18.04	4.78	17.11	
Elaboration	93.70	32.20	100.87	30.79	98.66	25.88	90.70	33.00	97.26	30.32	96.11	
Originality	32.11	14.00	28.77	10.47	28.72	7.28	30.83	15.23	31.67	13.12	33.84	
TCSW												
Originality(SI)	34.07	6.88	33.10	6.38	34.45	7.09	32.26	8.17	35.00	5.26	36.42	
Originality(OI)	39.59	16.68	33.90	12.91	40.48	16.93	32.30	10.89	33.70	13.38	31.58	

TABLE 2

T MEANS AND STANDARD DEVIATIONS OF EXPERIMENTAL AND CONTROL GROUPS ON TTCT AND TCSW

Experimental					Control					
27)	11(N=30)		12(N=29)		10(N=23)		11(N=23)		12(N=19)	
SD	M	SD	M	SD	M	SD	M	SD	M	SD
6.81	21.23	6.99	20.24	6.14	20.70	8.47	23.00	7.83	22.47	6.58
4.74	16.87	4.87	15.83	4.54	15.57	5.21	18.13	6.86	17.97	3.85
36.45	123.70	39.28	121.31	31.28	110.70	41.46	122.09	27.21	125.05	30.61
12.67	36.33	8.49	33.96	11.59	32.00	14.91	35.13	14.69	36.58	8.91
7.01	33.60	5.59	34.31	5.59	35.05	8.42	34.26	6.48	35.42	4.62
12.34	39.83	6.95	46.62	10.36	39.35	10.53	40.96	13.65	44.10	12.59
6.58	21.60	9.29	22.06	6.36	20.44	7.49	24.96	7.20	22.09	7.85
4.77	17.13	5.56	17.31	4.84	15.48	5.10	18.04	4.78	17.11	5.14
32.20	100.87	30.79	98.66	25.88	90.70	33.00	97.26	30.32	96.11	42.55
14.00	28.77	10.47	28.72	7.28	30.83	15.23	31.87	13.12	33.84	8.62
6.88	33.10	6.38	34.45	7.09	32.26	8.17	35.00	5.26	36.42	6.59
16.68	33.90	12.91	40.48	16.93	32.30	10.89	33.70	13.38	31.58	15.52

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TABLE 3

F-RATIOS AS INDICES OF THE SIGNIFICANCE OF MEAN DIFFERENCES OF EXPERIMENTAL AND CONTROL GROUPS ON TTCT AND TCSW

Treatment	F-ratios						df
	TTCT				TCSW		
	F	F	O	E	O(SI)	O(OI)	
Training	2.81		-	1.44	-	4.77*	1/144
Age	1.16	1.73	-	18.63**	-	-	2/144
Training x Age	1.37	-	-	1.39	1.63	2.75	2/144

*p < .05 **p < .01

TABLE 4

FREQUENCY OF ATTENDANCE IN PROGRAM

Subject Area	Attendance							
	10(N=30)	11(N=30)	12(N=30)	T(N=90)	10(N=30)	11(N=30)	12(N=30)	T(N=90
Language Arts (N=10)	8	5	6	19	2	5	4	11
Science & Mathematics (N=10)	7	10	4	21	3	0	6	9
Music	8	7	8	23	2	3	2	7
Total (N=30)	23	22	18	63	7	8	12	27

PART 2: STUDENT-PARENT PERCEPTIONS EVALUATED

Opinion and research over the past decade have supported the use of the autobiographical instrument as a screening device for the identification of gifted people (e.g. Barron, 1969; Khatena, 1969; MacKinnon, 1961; Renzulli, Hartman & Callahan, 1971; Roe, 1963; Schaefer & Anastasi, 1968; Taylor & Ellison, 1967; Torrance, 1965). The writer's interest in such instrumentation led to the construction of a creativity checklist entitled Something About Myself (e.g. Khatena, 1971b, 1972) which has since been used to identify adolescents and adults as high, moderate and low creatives in several experimental studies (e.g. Khatena, 1971c, 1973a). In addition the same instrument has been used for purposes of criterion validation the results of which have also been reported in several other studies (e.g. Khatena, 1971b; Khatena & Torrance, 1973). Recently, Something About Myself was factor analysed (Bledsoe & Khatena, 1973) to give six creative orientations such that a person could not only be identified as creative on the instrument by a total score but also identified as creative on six dimensions, namely, Environmental Sensitivity, Initiative, Self-Strength, Intellectuality, Individuality and Artistry, and in a paper presented at the Mental Health Center in Huntington, West Virginia (Khatena, 1973b) the usefulness and value of the instrument as a screening device accessible to parents was stressed.

A recent paper presented at the The Association for the Gifted/ The Council for Exceptional Children meeting in New York dealt with the developmental patterns in creative orientations of 912 West Virginian subjects in the 9th through 12th grade and from freshman to senior year in college, and reported (1) that on the total scale of the instrument which gave a creative index, subjects showed a steady rise in mean scores

from grades 10 and 11 for both boys and girls and between the sophmore and junior years of college for women, (2) that in general, the creative self-perceptions of adolescent boys and girls as measured by the total scale of the instrument was lower than those of college men and women, with boys and men showing somewhat better on the scale than girls and women, Further, when the responses were analyzed in terms of the 6 creativeorientations of the measure, both adolescents and college adults perceived themselves as having orientations in the order of priority of Environmental Sensitivity, Intellectuality, Individuality, Self-Strength, Artistry and Initiative (Khatena, 1974b). The instrument had only been used with heterogeneous groups of students from seven through all college levels, administered to the subjects themselves for response. It had not been used with students in the elementary school nor had it been used with gifted students. Since the present report is concerned with the creative development of gifted students of the Project and since it was of interest to the evaluation to find out how parents perceived this development it was thought appropriate to use the instrument to measure the creative orientations of these students.

PROCEDURES

The parents of all 90 Program participants or children in the experimental group and 90 non participants or children in the control group were sent the instrument by mail with relevant instructions on responding to the items of the checklist shortly after the Torrance Tests of Creative Thinking and Thinking Creatively with Sounds and Words were administered as posttests, and returning them by a set date. In addition, and as a check, Program participants were also asked to respond to the measure under the careful supervision of the three Coordinators. In this way comparison data of creative orientations as perceived by parents

of the experimental group (N=51 returns) and control group (N=41 returns), and as perceived by the students of the experimental groups (only 51 of the 90 whose parents had returned their response sheets were used) became available.

The measure, Something About Myself, is a 50 item forced choice creativity checklist which is based upon the rationale that creative behavior is reflected in the personal characteristics of the individual, in the way he thinks, and in the products that emerge as a result of his creative strivings.

Sample items of the checklist are:

_____ I am an imaginative person, a dreamer or visionary.

_____ When I think of an idea I like adding to it to make it more interesting.

_____ I have improvised in dance, song or instrumental music.

_____ I am not afraid to take risks should a need arise.

_____ I have invented a new product.

It generally takes between 10 and 15 minutes to complete the checklist. A credit of one point is awarded for every positive response with a total possible score of 50 points. The construction, reliability, validity and preliminary normative data of this measure have been reported elsewhere (Khatena, 1971 , 1972). Further, the measure as has been described earlier in this report provides 6 orientations as Environmental Sensitivity, Initiative, Self-Strength, Intellectuality, Individuality, and Artistry determined by factor analysis (Bledsoe & Khatena, 1973).

If a person is Environmentally Sensitive he is one who is open to the ideas of others, relates ideas to what can be seen touched or heard, is interested in the beautiful and humorous aspects of experiences, and has sensitivity to meaningful relations.

If a person is high on Initiative he is one who directs, produces

and/or plays lead roles in dramatic and musical productions, produces new formulas or products, and brings about changes in procedures or organization.

If a person has Self-Strength he is one who possesses self-confidence in matching talents against others, is resourceful, versatile and willing to take risks, has the desire to excel and has organizational ability.

If a person shows high on Intellectuality he is one who has intellectual curiosity, who enjoys challenging tasks, who has imagination, has preference for adventure over routine, who likes reconstructing things and ideas to form something different, and who dislikes doing things in a prescribed and routine way.

If a person has Individuality he is one who prefers to work alone rather than in a group, sees himself as a self-starter, is eccentric, is critical of others, thinks for himself, works for long periods without getting tired.

If a person has Artistry he is one who produces objects, models, paintings and carvings, who composes music, who has been awarded prizes or has had his works exhibited, and who has produced stories, plays, poems and other literary pieces.

RESULTS AND DISCUSSION

The data was then analysed and means and standard deviations of participant student and parent perceptions of creative orientations of these children, were computed and differences were tested for significance by the t-ratio, with .05 set up as the level of significance and presented as Table 5.

The means on 5 of the 6 orientations (Environmental Sensitivity, Self-Strength, Intellectuality, Individuality, and Artistry) show no significant differences. However, means on Initiative ($\underline{M}_{Student} = 2.29$, $\underline{M}_{Parent} = 1.76$)

TABLE 5

MEANS PERCENTAGES AND STANDARD DEVIATIONS OF SIX ORIENTATIONS AND TOTAL SCALE ON SAM AS PERCEIVED BY EXPERIMENTAL STUDENTS AND THEIR PARENTS

SAM	Items	Student (N=51)			Parent (N=51)			t (df=1/101)	p
		%	M	SD	%	M	SD		
Environmental Sensitivity	6	78.83	4.73	1.22	74.50	4.47	1.93	1.01	ns
Initiative	6	38.16	2.29	1.54	29.33	1.76	1.01	2.05	.05
Self-Strength	10	71.40	7.14	1.62	70.08	7.08	1.72	0.18	ns
Intellectuality	10	78.40	7.84	1.72	78.20	7.82	1.76	0.00	ns
Individuality	6	66.67	4.00	1.18	66.33	3.98	1.01	0.09	ns
Artistry	5	65.80	3.29	1.22	59.60	2.98	1.22	1.29	ns
Creative Index (Total Score)	50	67.52	33.76	6.09	56.18	28.07	4.74	5.27	.01

TABLE 6

MEANS PERCENTAGES AND STANDARD DEVIATIONS OF SIX ORIENTATIONS AND TOTAL SCALE ON SAM AS PERCEIVED BY PARENTS OF EXPERIMENTAL AND CONTROL STUDENTS

SAM	Items	Participant Parent (N=51)			Non Participant Parent (N=41)			t (df=1/91)	p
		%	M	SD	%	M	SD		
Environmental Sensitivity	6	74.50	4.47	1.93	82.50	4.95	1.60	1.73	ns
Initiative	6	29.33	1.76	1.01	24.83	1.49	1.10	1.23	ns
Self-Strength	10	70.08	7.08	1.72	69.30	6.93	1.97	0.38	ns
Intellectuality	10	78.20	7.82	1.76	73.70	7.37	1.95	1.15	ns
Individuality	6	66.33	3.98	1.01	67.83	4.07	1.24	0.37	ns
Artistry	5	59.60	2.98	1.22	60.00	3.00	1.38	0.08	ns
Creative Index (Total Score)	50	56.18	28.07	4.74	55.60	27.80	5.92	0.24	ns

and on the total scale ($\underline{M}_{Student}$ = 33.76, $\underline{M}_{Parent}$ = 28.07) are significant ($\underline{t}$ = 2.05, $\underline{df}$ = 101, $\underline{p} < .05$; $\underline{t}$ = 5.27, $\underline{df}$ = 101, $\underline{p} < .01$). What this means is that students tend to perceive themselves as having more Initiative and generally as being more creative than their parents perceive them. Further, analysis of the relative strengths of these 6 orientations in terms of the percentage of each mean is to the number of item components of each creative orientation indicates that participants order from highest to lowest their creative orientations as Environmental Sensitivity (78.83%), Intellectuality (78.40%), Self-Strength (71.40%), Individuality (66.67%), Artistry (65.80%) and Initiative (38.16%), whereas parents perceptions of the creative orientations of the same participants order the 6 orientations from highest to lowest as Intellectuality (78.20%), Environmental Sensitivity (74.50%), Self-Strength (70.08%), Individuality (66.33%), Artistry (59.60%) and Initiative (29.33%). It is interesting to note that in either case it is Initiative that is ranked lowest, and although parents tend to perceive their children somewhat higher on Intellectuality than the rest of the orientations, children tend to perceive themselves as highest on Environmental Sensitivity with very little difference between this orientation and Intellectuality

None of the mean differences in the perceptions of the 6 creative orientations or the total scale by parents of the experimental and control groups are significant (Table 6). What is of interest here lies in the comparison of the order of their perceptions of their children with reference to the 6 orientations. While parents of the experimental group have ordered these orientations from highest to lowest as Intellectuality (78.20%), Environmental Sensitivity (74.50%), Self-Strength (70.08%), Individuality (66.33%), Artistry (59.60%) and Initiative (29.33%), parents have ordered these orientations from highest to lowest as Environmental Sensitivity (82.50%), Intellectuality (24.83%), Self-Strength (69.30%),

Individuality (67.83%), Artistry (60.00%) and Initiative (24.83%).

What emerges from both these analyses are helpful clues about the relative strengths and weaknesses of these gifted students as measured by Something About Myself. In particular the creative orientations of Environmental Sensitivity and Intellectuality tend to be their greatest strengths while Initiative tends to be their greatest weakness with Self-Strength, Individuality and Artistry spread in the middle. These findings are supported by the evidence of the recent study on developmental patterns referred to earlier in this section of the report (Khatena, 1973c) which reported Environmental Sensitivity and Intellectuality as creative orientations of greatest strengths and Initiative as a creative orientation of greatest weakness.

From this evidence it seems that in the next phase of Program development at the Center, provision may be made for including planned experiences that would strengthen in particular the lacks relative to Initiative in terms of opportunity for students to direct or produce plays or skits, to take part in lead roles in dramatic or musical productions, to produce formulas, to make things, and even to practice the sensing of deficiencies in procedural patterns and organizations for the purpose of suggesting improvements, and other leadership roles that go beyond the screening instrument which in any case is suggestive of directions that may be taken. Another creative orientation that may be further strengthened is Artistry involving gifted students in the production of objects,models, paintings, and carvings, creative writing of stories, plays, poems and other literary pieces, which anyway are inherent in two of the Project's major activity areas(that of language arts and music and Art) and arranging for recognition of these efforts by way of exhibition and prizes. To give greater precision in this

kind of remedial work, each student's self-report on Something About Myself may need to be examined closely to determine what of the planned experiences he may specifically need and direction given for the acquisition of such experiences that would in fact enhance his creative development. Another developmental experimental study has called attention to the fact that not all children at every stage of their lives need exposure to nuturing procedures designed to increase their productivity with equal intensity, and that it may be of value to find out precisely what the child needs and to provide nuture specific to the reduction of the need (Khatena, 1973c) while reinforcing his strengths.

PART 3: OTHER SOURCES OF PROJECT EVALUATION

Further data for the appraisal of the Project, its Program, students progress, Resource Personnel, Staff, and Director's role and contributions to the operations of the Project were generated through the reports prepared by Resource Personnel, Project Co-ordinators and Director with the assistance of questionnaires for the first two groups of respondents. To this may be added participant student evaluation of one component of their Program and representative of much of the work done in the Project that recently became available. These reactions are generally by way of observational data and qualitative in nature for the most part.

RESOURCE PERSONNEL EVALUATION

All Resource Personnel who had in some way or other contributed to the Program were mailed an evaluation sheet which asked them to supply answers to 10 questions regarding their relationship to the student participants, their work with these students, the use of resources of the Center by way of materials and equipment, their working relationship with the Coordinators, the extent of personal satisfaction derived from working in the Project, and other relevant information including a call for recommendations. Sixteen returns became available and their responses are presented as follows:

(1) Do you have a child in the Project?

Two said yes and 14 said no,

(2) If you do, is your child in the experimental or control group?

One child was in the experimental and the other in the control group.

(3) What kind of work have you done with children of the Project?

A variety of activities were organized for the participants and included workshops on plants, acrylics and scenery for a multi-media production, lettering, dulcimer making, movement and dance for a mixed

media production, a tours to WMUL TV studios and a newspaper company, a novel writing unit, use of audio-visual aids, computer technology, formation of a chess club and instruction in the game, preparation for writing plays, creative writing, journalism and spoken Spanish.

(4) What kind of response did you get from the students you worked with?

Participant student responses to these activities ranged from moderate to excellent. Individual variability in interest was observed but generally children were cooperative and enthusiastic. Some good home follow-up activity was observed and in some instances determination to complete a project started was noticed. The older students were observed to ask more questions and to offer more feedback to the Resource Personnel concerning engagement in the activity, Students shed off much of their initial shyness as they grew engrossed in the activities.

(5) What kind of achievements (if any) and talent growth have you observed in these children?

Generally it was noted that the brevity of contact time made it difficult for them to observe and developments: many of the sessions were one shot deals. However the following observations were made: study in engineering design and assembly extended the limits of physical science study beyond the Center to the home and school; children learned to control and direct their energies more effectively; those children involved in dulcimer construction will have made one for their own use by the end of the Project; students seemed to show a greater awareness for movement and a realization for the need to develop related skills; acquisition of skill in chess playing became noticeable for some; one student showed great writing talent; most began to show

more confidence in their work and seemed to have broadened their horizons and to show greater enthusiasm for knowledge of people of other lands.

(6) Have you used the resources (by way of materials and equipment)of the Project? Have you found them adequate and relevant?

Eleven said yes, 3 said that this was not applicable and 2 said no. Generally facilities of the Center were used and found adequate. Some reference was made to the unreliability of tape recorders and cramped facilities for dance.

(7) How closely have you worked with the Coordinator(s) and how effective has the relationship been towards developing the potential of the students you worked with?

Twelve said that they had worked very closely with the Coordinators who proved very helpful and cooperative, while 4 said that this was not applicable by the nature of their work. Comments included assistance in setting the tone of sessions, establishment of rapport, giving encouragement to Resource Personnel, participating in the learning experiences, excellent relationship with students which prepared the way for high level of interest in working with Resource Personnel, assisted in the planning of the experiences for the sessions, and in helping them understand these special students.

(8) To what extent have you found your role and function as Facilitator and Resource Person satisfying?

Generally the experiences reported were very satisfying, enjoyable, gratifying, inspiring, and exciting, and to one of them, it was good to have been even a small part of a great machine. Two said that this question did not apply, and one found it both satisfying and dissatisfying while two others felt that they were insufficiently involved with the children and that the time spent with them was too short for making judgements about their experiences.

(9) Other?

Observations were few under this category. One said that if he had known what previous experiences these students have had relative to what he had planned to do with them he could have planned a more effective program. Another said that the parents as well as the students needed to know the extent of involvement in a project since they could then plan for it more appropriately. A third suggested the use of short story or imaginative writing as more appropriate project unit titles than the production of a novel for 10 to 12 year olds.

(10) What recommendations have you towards more effective Resource Personnel participation in the Project?

The Resource Personnel advanced the following recommendations:

(a) Provide more adequate information regarding the participants prior to the activity sessions so that better planning of the experiences may be done for them.

(b) Plan to have more students share practical experiences with other students preferably in an informal way.

(c) Consider giving Resource Personnel an honararium for the time spent with the students of the Project.

(d) The Program needs organized learning sessions in some areas since children though bright are not so able to learn thoroughly on their own at this age level; nor should they be left alone to be creative but have appropriate guidance and even direction to develop in this way.

(e) Use teachers who are specialists in certain fields to provide advanced studies on a regular basis for these children from which sessions can come creative projects and productions of quality.

(f) It would be of value for a large group with an interest in creative writing to meet several weeks before they select a particular model for

imaginative expression, namely, drama, short story, poetry and so on.

(g) Relative to imaginative writing, due to the length of time intervening between sessions, students may perhaps be encouraged to supply a statement or description of one or two ideas they would like to develop. If a student should think of a better idea following this he should be given the freedom to change.

(h) Somehow too many students did not seem to have a real commitment to complete a project: those who did, turned in stories on their own initiative. They should be encouraged to have this commitment.

(i) Tours should be scheduled during week days as well.

(j) Perhaps more study fields could be represented.

(k) Students should be exposed more frequently to activities such as films on travel, festivals in Spanish, music, art and so on.

COORDINATORS' EVALUATION

Three Coordinators were also asked for information regarding several aspects of the Project and supplied this in response to a questionnaire which called for their observations and comments to Program development and execution, and progress of participant experimental students in their areas of specialization, the relationship of and support to the Project by the schools, parental role and support, contribution of Resource Personnel, the available resources by way of materials and equipment, the work of the Coordinators with teachers, parents and others outside the Center, their views on staffing, and activities in which they engaged relative to their further professional development, and other information that they felt should be given followed by a request for their recommendations. The information that was received is presented as follows:

1. Program Development and Execution

A Summer Institute was held for the development of programs for the

Project, compilation of lists of Resource People and places, development of interest inventories for use in counselling sessions, and preparation of evaluation procedures to appraise student readiness for work on various projects.

Orientation of students was done in general together rather than in separate groups according to the three subject specialization areas. This involved ID Card, Library Card and Student Directory assignments, an Audio-Visual Workshop where students learned to operate and care for equipment, a visit to MU Library during which they were given practical experience on the use of some of the resources of the library, Creative Problem-Solving sessions leading to possible sensitization for future project selection, individual Counselling sessions at which interest areas were discussed leading to final selection of first project, and selection of activities that would be of general interest to the student. Fuller details of the Program following this initiation can be found included in the section on Instrumentation in the report of Experimental data (Pp. 15-24).

Comments were by way of the following: (a) With reference to monthly meetings held for discussion, individual research, counselling and loan of materials in science, these meetings were initially of value but as the sessions went on, many students became less interested in them. (b) Few worked on individual projects due to lack of self-discipline, real interest, and lack of time. They worked better in groups in monthly meetings. (c) There is a need to keep better record of ideas and original activities: this will help in the dissemination of what we have done to teachers in the region. (d) More students need to become involved in a continuing experience where they may get lessons in some skill, or be given a series of classes in some area of music rather than be exposed to one time workshops which make it difficult

to establish a need for individual follow-up work between sessions.

2. Progress made by Children of the Experimental Group.

In language arts, the work done in journalism had led to the publication of a magazine and newspaper. Further, the students became engaged in writing, acting, producing and directing a play which was finally video-taped. Several students began to learn Spanish while a few learned to write or illustrate a book, and one engaged in writing TV commercials. Those students in cience and athematics gained additional knowledge in areas they would not have known about: they learned,for example, to use the slide rule, about Einstein's theory of relativity, did experiments in lemon chemistry, crystals, learned speed arithmetic and built a computer. Music students showed progress in several ways and these included taking piano lessons, learning how to transpose in music for different instruments, learning to improvise as soloists and with others in a group, did original composition in poetry, music, art and dance for a multi-media production, and became increasingly open to creative and artistic expression.

As a result of exposure to the Program, some students have developed the habit of self-initiated study (though this has still be the case for the majority of the students), increased in self-esteem and poise, become better adjusted socially, developed enthusiasm for what they do, shown themselves to be more serious, purposeful and better behaved than non participants especially noticeable during the period of posttesting, and desirous of demonstrating their new learned skills in thinking and creative problem-solving to other students as well as to members of their family. They are also improved in their attitude towards the Project moving away from initial skepticism about themselves and the Project. They found satisfaction in the completion of their Projects. They learned to work alone, get along with others working in groups more effectively,

and were more enthusiastic in participating in Project activities regarding it as a high point in the week when they came to the Center. Many parents have expressed great pleasure over the progress their children have shown since they began participating in the Program.

Of concern, however, is the fact that attendance and participation has not been altogether regular for a number of these students. There is greater need for these students to develop the habit of self-initiated learning. These students need to spend more time in the Program, and if it could be arranged that they come to the Center during School days some of the time it would be of value to them. It is likely that attendance would become more regular and work in the Project may be regarded by these students as greater fun than even recreational activities.

3. The School System and its Relation and Support

The Schools have been generally most supportive of the efforts of the Project. They have assisted the Project in terms of referral services, release time for the testing of students and for their attendance of special events. Cooperation with the Coordinators has been very good with requests coming from various groups of teachers and supervisors for inservice workshops. School facilities and buildings have been made available to theProject when needed (e.g. Beverly Hills Junior High School and West Junior High School). Resource Personnel have been by and large schoolteachers and college instructors. In fact supervisory staff of the local school boards have been most helpful in locating Resource Personnel with special skills for the Project. It must be also noted that the facility housing Project TAG is donated rent free by Cabell County Board of Education.

Although most teachers and principals have been cooperative, some have failed to refer students, some have not allowed students to make

up the work they missed during the screening period although they were away from school with permission. Further, better lines of communication needs to be established between Schools and Project TAG, and this may be improved for one thing by the Project Staff making known to the School the aims and accomplishments of the Program and so that the Project may be felt an asset to the Schools.

4. Parents and their Role and Support.

Generally, the parents have been outstanding in their support of the Project. They have been a source of encouragement, assistance and patience: they have set aside their own activities to transport their children to the Center even in bad weather, served as chaperons to their children in the outside Center activities of the Project, and have expressed gratitude for the opportunity given to their children to participate in the Program.

However, some parents have not assumed these roles faithfully owing to their limited time, conflicting schedules, and in some cases even a lack of interest. The Center has tried to help where it could as for example it had been arranged that a boy in Mason County be given assistance by a Resource Person living nearby.

5. Resource People and their Contribution to the Project.

For the most part Resource Personnel have been very cooperative, enthusiastic and diligent. Many have helped in the Project without remuneration. The two who were hired on an hourly basis in outlying counties to work with students there individually, worked diligently and enthusiastically even helping in one case a student with transport problems. The Resource Personnel represent diverse talents and expertise in many fields of knowledge and have shared their strengths generously.

Even county supervisors have served as Resource Personnel or have referred other Resource Personnel to the Project, and have brought to the notice of the Project staff new books and materials of interest and value to the Project. This past year they have played an important part in the Project,and they will continue to play an even more significant role in the next two years of the Project.

Although in some instances Resource Personnel have been paid for their services , payment should be arranged for them on a regular basis since this is the way to ensure strong commitment to the Project.

6. Resources by way of Materials and Equipment.

In general, the resources at the Center have been adequate for the first year of the Project. Besides the materials and equipment of the Project, the facilities of the Cabell County Library, Marshall University Library, The Huntington Galleries, Cabell Board of Education curriculum and school facilities, and those of Private Industry and Government Agencies were made available to the Project and used when needed. However, there will be need for more sophisticated musical instruments and equipment with expansion of the Project in the next two years.

7. Work of Coordinator outside the Center (with Parents, Teachers and Others).

In addition to the responsibilities at the Center, the Coordinators reported that they had conducted workshops in science and mathematics, language arts, and music; served as Consultants in the several counties; assisted in making available to teachers materials on the teaching of gifted children; counselling parents about TAG students and the materials with which they could equip their children to facilitate their progress in the Program; given teaching demonstrations, created a mailing list of teachers, supervisors and other PACE Centers throughout the State, and disseminated information regarding the Project. The Coordinators were convinced that these extra-mural efforts would definitely enhance the

Project's operations in this region of West Virginia.

8. Staffing.

Staffing relative to the Program was considered adequate for the first year of the Project. With the fresh intake of another 150 students the number of participants would increase from 90 to 240 and together with the 90 non participants there would be a student body of 330 students in the second year of the Project. It was felt that the complexity of the task called for additional staff and the suggestions made included the need to hire at least one more Coordinator who could help to handle the testing, record keeping, and dissemination of information as well as any inservice training of teachers when necessary, and the need for additional part-time personnel to work with the Coordinators.

9. On-going Development of Coordinators Relative to the Project (Attendance of National Meetings, Workshops, University Courses and the like).

In addition to membership in many Professional Organizations the Coordinators report that they became members of the Marshall Chapter of the National Association for Gifted Children. Academically they have kept up with studies in their field of competence by attending Courses of one kind or another at Marshall University. In addition two of the Coordinators (Mary Glass and Mary Fike) have worked closely with the Consultant to the Project on a Course of Readings relative to the Gifted for graduate credit at Marshall University. All three Coordinators have since the inception of the Project attended a Creative Problem-Solving Workshop at Point Pleasant, West Virginia between 3rd and 5th December, 1973, with Jessie Kellam attending two Institutes (June, 1973 and 1974) and

Mary Fike one Institute (June, 1974) held at State University College, Buffalo, New York organized by Dr. Sidney J. Parnes and his associates of the Creative Education Foundation. In addition, the Coordinators assisted in the conduct of the first Summer Workshop of the Project aimed at Program Development. They also attended the National Association for Gifted Children Convention held during February, 14-16, 1974 at St. Louis, Missouri, where Mary Glass presented a paper entitled "Attitudes of West Virginian Principals Toward Gifted Child Education," a study relative to the initial phase of Project TAG. All Coordinators attended the COP Conference at Pipestem Park, West Virginia, between May 6th and 7th, 1974, and made presentations on the Project. Jessie Kellam had published an article on the Project in the 15th March, 1974 issue of the West Virginia School Journal. Further, all Coordinators have reported participation in various activities during the year in their fields of specialization.

10. Other.

They also called attention to the limitations of the physical structure of the PACE Center as follows: there are only a few rooms, and these are all without doors; there are no waiting rooms for parents and siblings which invite wandering around during periods of wait with consequent noise and distraction to all at work during Program sessions. With the increase in student intake it looks as if alternative premisses or supplementary premisses will become necessary. For science there will be a need of a laboratory with sufficient space for movement and experiment. Attendance has not been altogether as good as was expected. Students signed up for many activities but absented themselves from some of these without notice thus depriving others from taking part in them. Transportation was a real problem for rural children with many

parents unwilling to drive them to the Project. Communication with participants had not been very good: participants might receive letters from several people in the Project and tend to become confused over what and when they were to attend.

11. Recommendations.

The Coordinators have recommended that:

(a) Additional Personnel be employed in terms of one more coordinator, part-time help for the Program activities, and secretarial help.

(b) Additional space to accomodate the increase in student numbers and and to allow for a wider range of activities,

(c) Release of students from school on school days for participation in the Project.

(d) Removal of participants from the Program for not taking part regularly.

(e) Reward or credit students for attendance and participation.

(f) Arrange to help students in need of transportation.

(g) Have better communication between the Project and student participants and their parents, and between the Project and the School.

(h) Produce mini-courses which emphasize divergent thinking and creative problem-solving in the content, and courses that are not normally covered by the school curriculum for use by students at the Center and in distant counties.

3. Director's Evaluation

The Director was also invited to present his own observations of the Project and the salient features of his observations have been included as follows;

(a) Preliminary discussions regarding the Regional School have been made in preparation for further exploration in the second year of the Project by the Project Staff, Resource Personnel, Parents of participant students and the Board of Directors,

(b) Most students of the experimental group regularly attended work sessions scheduled by the Project, but there were some who did not. It may be that the absence of school credit for Project participation coupled with competing non Project activities had something to do with it.

(c) Those students in the experimental Program seem to have matured somewhat; the experimentals seemed more business like and task oriented when compared to the controls. This was especially noticeable during the Spring testing sessions. It seemed as if they had become more self reliant,

(d) County Schools have continued their support of the Program. Referrals for the second year of the Project (1974/75) have been more promptly made . The Cabell County school system provides additional services and facilities to the Project at request. The County Superintendents informed each month at the Board of Directors meeting regarding the progress of the Project are highly supportive of it.

(d) The Project Coordinators are in constant contact with parents of the students of the experimental group and plan to involve them in the activities of the Project even more next year.

(e) In the process of Program development, Project Coordinators have secured the services of many Resource People, many of whom have served

the Project without pay, others have received $5.00 per hour for their services. With few exceptions Resource People have done a good job, and services rendered have been satisfactory. As the Program moves into its second year, more and more Resource People will be needed, and it is hoped that the Coordinators will be able to secure these people with the same degree of success they have had in the first year of the Project.

(f) Adequate funds were available for the purchase of materials and equipment for the Program in the first year of the Project. Many books have been added to the Center's library and many more have been ordered. Further, the Coordinators have acquired the materials and equipment they needed in their areas of specialization.

(g) The Project Coordinators and Director have appeared before many County and Civic groups disseminating information about the Project. The Coordinators have done an excellent job in this respect, and have accepted as many engagements as their schedules permitted.

As recommendations, the Director would have for the period 1974/77:

(a) An additional General Coordinator whose duties and qualifications will be expected to relate to the conduct of the testing program, teacher inservice training, workshops, to the dissemination of Project information,and have a Master's degree with some knowledge of test administration and evaluation, and a minimum of two years public school experience with a valid West Virginia teaching certificate.

(b) Additfonal secretarial help,

Relative to his professional development, the Director has read widely on programs for the gifted, and has completed a special topics course at Marshall University on the gifted with Dr. Joe Khatena. He has visited programs for the gifted in the Los Angles and San Diego

School Systems, attended the Illinois, New York-USOE, and the National Association for Gifted Children Conferences and has become a member of the National Association for Gifted Children.

4. Students' Evaluation of a Summer Workshop

Finally student participants were asked by the Coordinators to evaluate the recent Summer Workshop held for them at West Junior High School between 8th and 12th July, 1974.

The curriculum of the Workshop was interest centered. A form was sent to all students in the experimental group in May inviting them to list their preferences of courses they desired to take. They were also asked to list any courses they would like to sign up for and which were not listed.

A total of 31 students signed up for the Workshop. There were many conflicts with vacation schedules and summer projects of various types which prevented others from attending.

Classes were scheduled from 9.00 a. m. until 2.00 p.m. and included the following subjects: anatomy and ecology, batik, computers, electronics, first aid, music, gymnastics, creative reading, debate, chess, clay modelling and beginning guitar.

At the end of the week the student participants were asked to evaluate the Workshop. All 31 students said they enjoyed the Workshop and that the time was well spent. The suggestions for improvement of the Workshop included having longer workshop, many more course offerings later in the day with some disagreement about how long a session should last. However, 27 of these students felt that sessions would improve with a time increase. The sessions they most enjoyed were clay modelling, anatomy, batik, chess and debate. When asked for suggestions as to what subjects could be added to the Workshop towards its improvement, there

were a variety of choices as expected of gifted students and these included journalism, mechanics, chemistry, modern dance, mathematics, speed arithmentic, something on animals, art, sports, oil painting, pottery, candle making, astronomy and piano. When asked what they did not like about the Workshop, 14 said there was nothing they disliked about it, 4 said the time was insufficient while 1 said it was too long, 3 said there was no pop machine, and the rest made singular comments which included anatomy, writing, too early a start in the day, the same thing everyday, and transportation. Finally, 29 of the participants said they wished to participate in a similar workshop in the Fall.

All in all these students participated enthusiastically and strongly expressed a desire for another workshop with some attention given to the expansion and refrinement of programs offered.

APPRAISAL AND RECOMMENDATIONS

1. Program and Students

The experimental findings of this report have provided evidence that the talented and gifted students of the Project who were exposed to a program of activities rooted to creativity over a three month period have shown significant improvement in verbal originality as measured by Onomatopoeia and Images when compared to the performance of those students who had not been exposed to the Program. There was also an improvement in figural originality as measured by the Torrance Test of Creative Thinking but relative to age and not to training and in favor of control students. The Program does not appear to have brought about improvement in the areas of figural fluency, flexibility, originality and elaboration as reflected in the scores of the Torrance Test of Creative Thinking. Further, the perceptions of creative orientations both by parents of Project students, and students of the experimental group as measured by Something About Myself creativity checklist has provided evidence that students of the Project are weakest on Initiative or in leadership experiences relative to lead positions in dramatic or musical productions, to effecting change in procedural patterns and organizations, to producing new formulas and to make things. Another creative orientation that could be further strengthened is Artistry or the operations involving productivity in art and literature. These students showed greatest strengths in the creative orientations of Environmental Sensitivity and Intellectuality both of which could be further enhanced.

On the basis of this evidence, and in addition to what had been indicated in the conclusions on pages 34, 43 and 44, it is recommended that the following be emphasized in the second year of the Project, and may be given appropriate emphasis in the development of a Program Model

for the second year of operation at the second Summer Institute to be held in the last week of July and the first week of August, 1974:

(a) Special attention and emphasis need to be given to the development of the four creative thinking abilities, namely, fluency, flexibility, originality and elaboration.

(b) Activities that encourage the development of these creative thinking abilities including the use of analogy, restructuring and synthesis need to be planned for these students and these should be rooted to the affective domain of creative thinking as described by Frank E. Williams.

(c) More sustained efforts should be made and more substantial blocks of time planned for the exposure of experimental students relative to the first two recommendations, facilitated by more innovative scheduling of school time for the students with the help of the principals and other education authorities.

(d) Cooperative efforts as in group work in the context of mild competition among groups of experimental students to improve the motivational level and create productive striving efforts need to be planned.

(e) A system of rewards needs to be established for more effective control of experimentals: a fine transition from extrinsic reinforcers to intrinsic reinforcers may have to be made with the development of the Program.

(f) Experiences levelled at developing creative attitudes to learning that will establish creative sets to mental functioning and performance need to be arranged for these students.

(g) Experiences for more effective use of the library levelled at developing skilful use of the facilities and resources it provides should be arranged: this could find connections with the projects that students decide to undertake when students become more sensitive to their need to use the

library. They should be taught the proper use of index cards for recording data they find with the purpose of developing proper storage for efficient retrieval of information as and when required. Maintenance of library activities need to be kept at an optimal level with encouragement given to students to apply the creative problem-solving skills they have learned. Some unobtrusive system of checks may be devised to facilitate appropriate use of the library.

(h) Students need to be made more aware of the different sources of knowledge, namely, through experience, by authority, through deductive and inductive reasoning, and their relative strengths and weaknesses. Further, they need to be given more experiences in the scientific method and its operational steps that should take them from the initial problem sensing stage to the final solution stage. The different research strategies offer different approaches to the study of various problems: students may learn about them so that they may be better able to plan the use of the most appropriate technique to find tentative answers to their questions.

(i) Greater emphasis may be given to students need to complete their projects with something to show for their efforts and this in turn will provide yet other occassions for positive reinforcements.

(j) Visits to various places of interest geared to learning are of great relevance and can be made more effective if tied in with student project needs.

(k) Provision of leadership experiences should receive considerable attention in developing the Program Model for the second year of the Project. It should be planned that students be encouraged to exercise initiatory activities to an even greater extent than in the first year with opportunities for them to assume leadership roles. This ought

to include attempts to make break throughs relative to their strengths either as individuals or in groups, by way of initiating situations leading to composition, invention, reorganization, planning, and working together possibly on larger projects like a dramatic or musical production, or newspaper production with opportunities for the formation of many sub-groups and leadership positions related to the aims of the total project.

(l) The Coordinators' suggestions on the creation of Mini Courses in special areas of interest are highly relevant and should find inclusion in the Program Model for the second year of operation, the structure and content of which can be determined at the second Summer Institute.

(m) It would be of great value to the evaluation component of the Project to have the progress of the initial 90 experimentals more carefully recorded and reported in time for the next evaluation. The form this will take may be determined by the Coordinators in consultation with the Project Consultant.

(n) Appraisal of two larger experiences in the Program by experimental participants will also be helpful to the planning of further experiences for them in the third year of the Project, and the form of this may also be determined by the Coordinators in consultation with the Project Consultant.

(o) The need for an additional Coordinator, more Resource Personnel and Secretarial help with the expansion of the Project as foreseen and observed by the Coordinators and Director is endorsed.

(p) Resource Personnel need to be appropriately oriented to the aims and goals of the Project and its Program for congruence in their interactions with the students.

(q) Means of using participant students' school teacher to maintain the strengths students have gained through the Program, and assist in the extension of these strengths in their school activities should be explored.

(r) The possibility of giving awards for outstanding service to the advancement of the Project's aims and goals by Parents, Resource People, Educators, Administrators and the like should also be explored. Certificates of Merit appropriately presented at one of the Project's public functions is one effective way of providing incentive to those who are important in the process of facilitating the development of these gifted students. Other ways should also be considered.

2. Project Staff (Resource Personnel, Coordinators and Director)

The assessment of the Project by the Resource Personnel, Coordinators and Director is generally positive, and the recommendations and suggestions made about various aspects of the Project by Resource Personnel (Pp.48-49), Coordinators (Pp.49-57), and Director (Pp.58-59) are both pertinent and valuable. The Director and Coordinators have worked very closely with the Project Consultant on all relevant matters, and the external consultant Dr. John C. Gowan from California in a workshop further confirming and refining what was being done by the Project, and in addition with Resource Personnel relative to their work with students in the Program. The successful attempts of the Director and Coordinators to develop professionally relative to more effective functioning in the Project in terms of their study in the area of the talented and gifted, and creativity, both at Marshall University and in Workshops in and out of West Virginia, as well as their attendance of State and National meetings and conferences together with participation in professional writing about the Project must be

appreciated. Their services have extended from the Center to the Community and have found expression in inservice training for groups of teachers, in consultation with parents and other interested parties, and in disseminating information about the Center in so many different ways. Further, they have responded to the uniqueness of the Project and its Program in a sensitive, flexible, innovative and inventive way. , They worked in the first year of the Project as a great team and show every indication that they will continue to do so in the next phases of the Project.

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